

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>C12N 9/00, 9/04, 1/00, 1/20, 5/00, 5/10, 15/09, 15/10, 15/29, 15/52, 15/53, 15/63</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/55846</b>  <b>(43) International Publication Date:</b> 4 November 1999 (04.11.99)
<b>(21) International Application Number:</b> PCT/US99/08975 <b>(22) International Filing Date:</b> 23 April 1999 (23.04.99)  <b>(30) Priority Data:</b> 60/082,977      24 April 1998 (24.04.98)      US  <b>(71) Applicant (for all designated States except US):</b> WASHINGTON STATE UNIVERSITY RESEARCH FOUNDATION [US/US]; N.E. 1615 Eastgate Boulevard, Pullman, WA 99164-1802 (US).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> XIA, Zhi-Quiang [CN/US]; Apartment L1, 1650 N.E. Valley Road, Pullman, WA 99163 (US). COSTA, Michael, A. [US/US]; 275 N.W. Sunrise Drive, Pullman, WA 99163 (US). DAVIN, Laurence, B. [FR/US]; 1710 Upper Drive, Pullman, WA 99163 (US). LEWIS, Norman, G. [CA/US]; 1710 N.E. Upper Drive, Pullman, WA 99163 (US).  <b>(74) Agent:</b> McGURL, Barry, F.; Christensen O'Connor Johnson & Kindness PLLC, Suite 2800, 1420 Fifth Avenue, Seattle, WA 98101 (US).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.          Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
<b>(54) Title:</b> RECOMBINANT SECOISOLARICRESINOL DEHYDROGENASE, AND METHODS OF USE		
<b>(57) Abstract</b>  <p>A secoisolariciresinol dehydrogenase protein has been isolated from <i>Forsythia intermedia</i>, together with cDNAs encoding secoisolariciresinol dehydrogenase from this species. Accordingly, isolated DNA sequences are provided which code for the expression of secoisolariciresinol dehydrogenase. In other aspects, the present invention is directed to replicable recombinant cloning vehicles comprising a nucleic acid sequence which codes for a secoisolariciresinol dehydrogenase protein, or to a base sequence sufficiently complementary to at least a portion of a secoisolariciresinol dehydrogenase DNA or RNA to enable hybridization therewith. Thus, systems and methods are provided for the recombinant expression of secoisolariciresinol dehydrogenases that may be used to facilitate the production, isolation and purification of significant quantities of recombinant secoisolariciresinol dehydrogenase for subsequent use, to obtain expression or enhanced expression of secoisolariciresinol dehydrogenase in plants in order to enhance, or otherwise alter, lignan biosynthesis, or may be otherwise employed for the regulation or expression of secoisolariciresinol dehydrogenase.</p>		